SELF-ALIGNED METAL-OXIDE-COMPOUND SEMICONDUCTOR DEVICE AND METHOD OF FABRICATION

Abstract of the Disclosure

A self-aligned enhancement mode metal-oxide-compound semiconductor FET (10) includes a stoichiometric Ga_2O_3 gate oxide layer (14) positioned on upper surface (16) of a compound semiconductor wafer structure (13). The stoichiometric Ga_2O_3 layer forms an atomically abrupt interface with the compound semiconductor wafer structure. A refractory metal gate electrode (17) is positioned on upper surface (18) of the stoichiometric Ga_2O_3 gate oxide layer (14). The refractory metal is stable on the stoichiometric Ga_2O_3 gate oxide layer at elevated temperature. Self-aligned source and drain areas, and source and drain contacts (19, 20) are positioned on the source and drain areas (21, 22).